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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/153,831	09/15/1998	STEVEN J. EBERBACH	94-906CIP	6100

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EXAMINER

LEE, PING

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/153,831

Applicant(s)

EBERBACH, STEVEN J.

Examiner

Ping Lee

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 11-17, 20-29 is/are rejected.
- 7) ☒ Claim(s) 18 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 25 and 28 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 10 of U.S. Patent No. 5,809,150.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed "said sound field being asymmetric about the axis of maximum amplitude of the sound field" in claim 25 of the instant application is inherently the response of the claimed "skewed hypercardioid energy distribution" in claim 2 of patent '150; the claimed "maximum amplitude of the sound field" of the instant application is inherently provided by the claimed "major lobe of energy".

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Although claim 10 of patent '150 fails to claim "at least one sound radiating system" as specified in the instant application, "reproducing sound by creating an acoustic energy sound field" in claim 2 of patent '150 is inherently performed by at least one sound radiating system. Although claim 10 of patent '150 fails to explicitly cited "amplitude gradient", an amplitude gradient is inherently provided between the maximum lobe (having maximum energy) and the minimum of energy. Since patent '150 specifies that the direction of the of the major lobe axis and the direction of the minimum are substantially independent of frequency over a five octave span, the newly added limitation "said amplitude gradient between said maximum and said minimum being preserved over at least two full octaves" is met.

Regarding claim 28, patent '150 fails to define a frequency range. However, claim 10 of patent '150 specifies a method to reproducing sound. The frequency spectrum for an audio sound is generally ranged from 20 Hz to 20 kHz. The claimed "between 120 Hz and 4 kHz" is within this range. Thus, it would have been obvious to one of ordinary skill in the art to modify patent '150 by calibrating the frequency response of the reproduced sound in order to ensure that the sound field is preserved at least two full octaves lying between 120 Hz and 4 kHz.

3. Claims 22-24 and 29 are rejected under the judicially created doctrine of obviousness- type double patenting as being unpatentable over claim 11 of U.S. Patent No. 5,809,150 in view of Gefvert (5,533,129).

Claim 17 of patent '150 also fails to claim at least one loudspeaker having at least two drivers, at least two channels from an electric signal source and each

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channels associated with the creation of sound fields from the last two drivers. Gefvert teaches a loudspeaker with at least two drivers (72,76) for creating multidimensional sound fields emanating in non-parallel directions substantially from a point in space in plan view. Since Gefvert does not teach or suggest that the driver 72 and driver 76 are different from each other, so one skilled in the art would have expected that the drivers are the same and the amplitude gradient of one sound field versus angle being inherently complementary to the amplitude gradient of the other sound field. Thus, it would have been obvious to one of ordinary skill in the art to modify claim 11 of patent '150 in view of Gefvert by duplicating the sound field created as claimed in claim 11 of patent '150 and forming a loudspeaker with two drivers as taught in Gefvert in order to creating a multidimensional sound fields for the listener.

Although claim 17 of patent '150 fails to explicitly cited "amplitude gradient", an amplitude gradient is inherently provided between the maximum lobe (having maximum energy) and the minimum of energy. Since patent '150 specifies that the direction of the of the major lobe axis and the direction of the minimum are substantially independent of frequency over a five octave span, the newly added limitation "said amplitude gradient between said maximum and said minimum being preserved over at least two full octaves" is met.

4. Claims 1-4, 7-10, 12-17, 20, 21, 26 and 27 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 2-4 and 10 of U.S. Patent No. 5,809,150 in view of Gefvert (5,533,129).

Claims 2-4 and 10 of patent '150 specify a skewed sound field which inherently being asymmetric about the axis of maximum amplitude of the sound field. Although claim 10 of patent '150 fails to explicitly cited "amplitude gradient", an amplitude gradient is inherently provided between the maximum lobe (having maximum energy) and the minimum of energy. Since patent '150 specifies that the direction of the of the major lobe axis and the direction of the minimum are substantially independent of frequency over a five octave span, the newly added limitation "said amplitude gradient between said maximum and said minimum being preserved over at least two full octaves" is met.

Claims 2-4 and 10 of patent '150 fail to claim at least two sound fields as specified in claims 2, 4, 8 and 10 of the instant application. Gefvert teaches a loudspeaker with at least two drivers (72,76) for creating multidimensional sound fields emanating in non-parallel directions substantially from a point in space in plan view. Since Gefvert does not teach or suggest that the driver 72 and driver 76 are different from each other, so one skilled in the art would have expected that the drivers are the same and the amplitude gradient of one sound field versus angle being inherently complementary to the amplitude gradient of the other sound field. Thus, it would have been obvious to one of ordinary skill in the art to modify claim 10 of patent '150 in view of Gefvert by duplicating the sound field created as claimed in claim 10 of patent '150 and forming a loudspeaker with two drivers as taught in Gefvert in order to creating a multidimensional sound fields for the listener.

Claims 2-4 and 10 of patent '150 also fail to claim a loudspeaker having at least two drivers mounted in the loudspeaker as specified in claims 1, 3, 7, 9, 20, 21 and 26 of the instant application. However, Gefvert teaches how to mount two drivers in a compact loudspeaker. Thus, it would have been obvious to one of ordinary skill in the art to modify patent '150 by mounting two drivers in a loudspeaker as taught in Gefvert in order to provide a compact housing.

Regarding claims 12-16, Gefvert teaches how to modify a signal in one channel.

Regarding claim 17, although Gefvert fails to show that the signals are modified prior to amplification, the sequence of performing one over the other would not produce any unexpected result.

Regarding claims 20 and 21, a listener should sit symmetrically with respect to the speakers in order to receive the sound from speakers evenly.

Regarding claim 27, patent '150 fails to define a frequency range. However, claim 10 of patent '150 specifies a method to reproducing sound. The frequency spectrum for an audio sound is generally ranged from 20 Hz to 20 kHz. The claimed "between 120 Hz and 4 kHz" is within this range. Thus, it would have been obvious to one of ordinary skill in the art to modify patent '150 by calibrating the frequency response of the reproduced sound in order to ensure that the sound field is preserved at least two full octaves lying between 120 Hz and 4 kHz.

5. Claims 5 and 6 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 2-4 and 10 of U.S. Patent No. 5,809,150 in view of Suzuki et al (4,860,363).

Claims 2-4 and 10 of patent '150 specify a skewed sound field which inherently being asymmetric about the axis of maximum amplitude of the sound field. Although claim 10 of patent '150 fails to explicitly cited "amplitude gradient", an amplitude gradient is inherently provided between the maximum lobe (having maximum energy) and the minimum of energy. Since patent '150 specifies that the direction of the of the major lobe axis and the direction of the minimum are substantially independent of frequency over a five octave span, the newly added limitation "said amplitude gradient between said maximum and said minimum being preserved over at least two full octaves" is met.

Regarding claims 5 and 6, patent '150 fails to specify that a plurality of loudspeakers surrounding a relatively large area of expected listener location. Suzuki teaches how to provide a wide sound coverage using two loudspeaker with their responses in mirror image. Thus, it would have been obvious to one of ordinary skill in the art to modify patent '150 by placing two loudspeakers as suggested by Suzuki in order to provide stereophonic sound image to the listener.

Response to Arguments

6. Applicant's arguments filed 10/19/05 have been fully considered but they are not persuasive.

Applicant's argument is based on the newly added limitation on each independent claim. However, claims 10 and 17 of patent '150 specify that the direction of the major lobe axis and first minimum of energy are substantially independent of

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frequency over a five octave span". This statement met the newly added limitation.

Therefore, the double patenting rejection remains.

Claim Objections

7. Claims 1-10 and 12-29 are objected to because of the following informalities: the limitation that the amplitude gradient is preserved should be corrected as –substantially preserved--. Appropriate correction is required.

Allowable Subject Matter

8. Claims 18 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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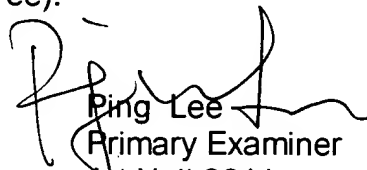
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ping Lee whose telephone number is 571-272-7522.

The examiner can normally be reached on Monday and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Ping Lee
Primary Examiner
Art Unit 2644

pwl